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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,314	01/14/2004	Mohammed Mahbubur Rahman	WJT08-0053 (JSF001-0002)	3500

7590 07/12/2005

William J Tucker
14431 Goliad Drive
Box #8
Malakoff, TX 75148

EXAMINER	
HAM, SEUNGSOOK	

ART UNIT	PAPER NUMBER
2817	

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/757,314	RAHMAN ET AL.	
	Examiner	Art Unit	
	Seungsook Ham	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: The phrase, "a third resonator located on a third layer of dielectric material" should be deleted throughout the specification (including abstract).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 8 and 20, "the remainder of the resonators are on the top layer and in microstripline form" appears to be misleading since resonators themselves are in stripline form only, but other elements in the filter/resonator circuits are in microstripline form. Moreover, "each combline resonator" is confusing as to which resonator referring to.

It appears that the applicant intended to cancel claims 8 and 10 (see REMARKS, p. 8, first paragraph, and p. 9 fifth paragraph), however, the Amendment filed on 5/17/05 (see pp. 4 and 6) still contains claims 8 and 20 as "Currently Amended."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peters (US '259) in view of Liang et al. (US 6,492,883, insofar as understood).

Peters (figs. 4A-4C) discloses a multilayer filter comprising: a first resonator 208a on a first dielectric layer 202c; a second resonator 206 coupled to the first resonator on a second dielectric layer 202b; and a third resonator 208b on the first dielectric layer coupled to the second resonator and cross coupled to the first resonator; an input transmission line 207a connected to the first resonator; and an output transmission line 207b connected to the third resonator; and two ground planes 200, 203 are provided on upper and bottom planes. It should be noted that "a third resonator located on a third layer of dielectric material" as recited in claims 1, 13 and 25 has been assumed as the third resonator located at the first layer of dielectric material (see applicant's drawing, fig. 4).

Peters does not show a voltage variable capacitor is coupled to at least one of the resonators. Liang et al. (figs. 6-9) discloses a similar combline filter having voltage variable capacitors coupled to resonators to tune each resonant frequency or the center frequency of the filter. Moreover, Liang et al. also suggests using MEMS varactors as a variable capacitor (col. 10, lines 20-48).

It would have been obvious to one of ordinary skill in the art to provide a voltage tunable variable capacitors or MEMS varactors of Liang et al. in the device of Peters to tune in different frequencies (including the center frequency) for fast tuning capability, small size as well as improve the insertion loss as shown by Liang et al. (col. 5, lines 11-26, col. 6, lines 45-67, for MEM varactors, col. 10, lines 20-48).

The subject matter of claims 8 and 20 cannot be given any patentable weight since it is unclear as what would be constitute as "the remainder of the resonators".

Response to Arguments

Applicant's arguments filed on May 17, 2005 have been fully considered but they are not persuasive.

Regarding claims 8 and 20, examiner requests to cancel claims 8 and 20 (see REMARKS, p. 9, fifth paragraph).

In response to applicant's argument that there is no suggestion to combine the references (see REMARKS, page 10 and 11, Part IV), the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Liang et al. discloses a similar combline bandpass filter (fig. 6) having a voltage tunable variable capacitor (including MEM varactors) coupled to a resonator to tune in different frequencies. Liang et al. also teaches voltage variable

capacitors or MEM varactors provide fast tuning capability, small size, low insertion loss, etc. (see col. 5, lines 11-26, col. 6, lines 45-67, for MEM varactors, col. 10, lines 20-48). Therefore, it is the examiner's position that it would have been obvious to one of ordinary skill in the art to provide a voltage tunable variable capacitors or MEMS varactors of Liang et al. in the device of Peters to tune in different frequencies for the advantages that taught by Liang et al. Moreover, Liang et al. teaches that tunable duplexers (e.g., filters) can cover larger frequency band than fixed duplexers (col. 9, line 63 – col. 10, line 6).

It should be noted that the applicant amended the independent claims 1 and 13, by inserting "voltage tunable" variable capacitor. Thus, whether providing a variable capacitor in a resonator to tune a resonant frequency is well known in the art is moot. However, the examiner includes Pickett and Tsuda references which shows a voltage tunable bandpass filter having a voltage-tunable variable capacitor/diode coupled to a resonator.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Pickett and Tsuda disclose a tunable filter having a voltage tunable capacitor coupled to a resonator; and

Allison et al. (fig. 7) and Kwon et al. disclose a tunable filter having MEM varactors coupled to a resonator.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seungsook Ham whose telephone number is (571) 272-2405. The examiner can normally be reached on Monday-Thursday, 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571)-272-1769. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Seungsook Ham
Primary Examiner
Art Unit 2817

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